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STRATEGY RESEARCH PROJECT

COUNTERING THE PROLIFERATION OF WEAPONS OF MASS DESTRUCTION; THE CASE FOR STRATEGIC PREEMPTION

BY

COLONEL DAVID J. REHBEIN United States Army

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Countering the Proliferation of Weapons of Mass Destruction; The Case for Strategic Preemption

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ABSTRACT

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The declaratory policy of the United States is to prevent the acquisition of Weapons of Mass Destruction (WMD) and their delivery systems. The United States has been hesitant to use military force to preempt the acquisition of WMD even with recalcitrant proliferators whose intentions and demonstrated behavior are counter to the interests of the U.S. This paper outlines the case for backing our declared policy with more aggressive counterproliferation actions, and describes those cases where preemptive conventional military actions are not only appropriate, but are in the best long term interests of the United States.

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ACKNOWLEDGEMENTS

I would like to thank Dr. Gary Guertner, Director of the Department of National Security and Strategy at the U.S. Army War College for his counsel and advice. The discussions we had, and which still continue on this subject, began well before he agreed to be my project advisor. I know I enjoyed listening to him and learning from him more than he enjoyed my rantings in the classroom. I'm convinced that he considers me Attila the Hun reincarnate, and his attempts to council restraint may have even moderated my views...and for that I am grateful...I think.

To my lovely bride: Leila, thank you for sticking with me through everything, making me work when I didn't want to...and for teaching the bird to say "Nuke 'em!"

COUNTERING THE PROLIFERATION OF WEAPONS OF MASS DESTRUCTION; THE CASE FOR STRATEGIC PREEMPTION

"If they know that you have a deterrent force capable of hitting the United States, they would not be able to hit you. Because if we had possessed a deterrent, missiles that reach New York, we would have hit it in the same moment...The world has a nuclear bomb, we (should) have a nuclear bomb...When the world is playing around with rockets and bombs, we must be capable of playing the game. These are our objectives."

- Muammar al-Qaddafi 18 April 1990

A popular radio talk show host frequently reminds his audience that "words mean things." In harping on this point he correctly admonishes us to pay attention to what we say...and, just as importantly, to what is said to us by others. All sorts of misfortunes can befall those who don't fully understand the meanings of communications or glibly mislabel activities to make them sound other than what they really are or to make them politically acceptable. I fear this may be the case in both our perceptions of the global proliferation of Weapons of Mass Destruction (WMD) and the less than robust "counterproliferation" policy response of the United States to this growing threat. Seldom are we told of other's sinister intentions as unequivocally as has Colonel Qaddafi stated his desire for nuclear weapons; but if actions speak louder than words, then the observed shipments of specific compounds, supplies, equipment, and chemicals to various

and sundry nations has clearly stated the existence of numerous ongoing programs to develop nuclear, biological, and chemical (NBC) WMD. Many of these programs continue to exist — even flourish — because we seem unwilling to bring to bear the full range of our capabilities against these threats. As unpleasant as it may be to some, there is a case to be made for more aggressive strategic preemption. The precise, judicious, and forceful use of conventional military might to halt a developing WMD program dead in its tracks is a course of action we must not be afraid to use. It is an option open to us under our declared counterproliferation policy¹, but unfortunately, it is a case where not living up to the meaning of our own words may let us feel good now but will have disastrous consequences in the future.

The counterproliferation policy of the United currently suffers from a lack of focus due to imprecision in definitions of words and a failure to link them to actions. Counterproliferation has become an increasingly popular cause in national security and governmental circles ever since the Soviet Union collapsed and musings about loose nukes began to look less and less like speculative fiction and more like real life. Add in the growing spread of simple technologies for the manufacture of chemical and biological agents; mix in a healthy dash of suspected and confirmed uses in the middle and far east - not to mention terror attacks in Tokyo - and the resulting brew of a real threat of NBC weapons available to growing numbers of parties has finally attracted the attention it rightly deserved long before now. In our National Security Strategy the United States officially specifies the proliferation of WMD as the preeminent danger to international security.

Weapons of Mass Destruction pose the greatest potential threat to global security. We must continue to reduce the threat posed by existing arsenals of such weaponry as well as work to stop the proliferation of advanced technologies that place these destructive capabilities in the hands of parties hostile to U.S. and global security interests.² [emphasis added]

Money is flowing for "counterproliferation" efforts in the military and other government agencies. Given today's budget realities the smell of money brings many programmatic sharks. It's not surprising therefore to discover just how many funded programs taxpayer have something to do "counter-proliferation." At the rate we're spending we should be really good at it - but we're not. because so many of the programs fail to grapple with the hardest part of the problem. Unfortunately, most of the nation's "counterproliferation" efforts, be they studies, wargames, workshops, or even procurement, focus on countering the effects of proliferation, not countering the proliferation itself. To be sure, this is not all wasted effort. We must be able to deal with the consequences of WMD use. Further, our military forces must be capable of fighting in a contaminated environment against an enemy that uses unconventional weapons. But that's been true in ever increasing degree since at least the First World If in our "counterproliferation" efforts we mainly focus on responding to their use or fighting in a contaminated environment against an enemy armed with these weapons, then we've already ceded the counterproliferation fight. We're no longer fighting against, opposing, or inhibiting the proliferation of weapons of mass destruction - the literal meaning of the word counterproliferation.

What is in fact the leading part of our official definition of counterproliferation is the least addressed in "counterproliferation" efforts. The Defense Department's policies for supporting the Defense Counterproliferation Initiative state:

Specific objectives of the Defense Counterproliferation Initiative are to: (1) prevent the acquisition of NBC weapons and their delivery systems, (2) roll back proliferation where it has occurred, (3) deter the use of NBC weapons and their delivery systems, and (4) adapt U.S. military forces and planning to respond to regional contingencies in which U.S., allied, and coalition forces face NBC threats. The ordering of the objectives is deliberate. In line with national policy, proliferation prevention is the top priority.³

If we take these words at face value, we need to get more serious about the front end of the problem.

To ensure overall success in our nation's efforts to stem proliferation there ought to be a clear distinction between nonproliferation (NP) and counterproliferation (CP). Nonproliferation comprises those activities which persuade and encourage nations not to embark upon the development of WMD. It

encompasses non-violent tools such as diplomatic appeals to moral arguments, economic incentives, assurances of cooperative security against would-be foes and is clearly linked to the growing family of democracies worldwide.4 It has been remarkably successful in recent decades. Far fewer nations possess nuclear weapons now than was feared would be the case a generation ago. Further, the world-wide consensus and abhorrence of the dangers of biological and chemical weapons has created a climate for almost universal condemnation of and abstinence from production, stockpiling, and use of chemical and biological This abhorrence has been codified into sweeping treaties imposing intrusive compliance inspections. The majority of the world has agreed to the Non-Proliferation Treaty (NPT), the Chemical Weapons Convention (CWC), and the Biological Weapons Convention (BWC). However, for all the unexpected successes of our nonproliferation activities, the fact remains that even a single individual "bad actor" can inflict enormous suffering and damage upon us and our allies.

The idealistic long term end of our combined NP and CP policies is the elimination of all WMD. Our policies, treaty agreements, and unilateral actions in chemical, biological, and nuclear weapons activities all ostensibly support that goal. However, in the short term, our goal must be to prevent any new members in the WMD club. Unfortunately, there will always be

foreign powers for whom moralistic and political arguments fall upon deaf ears - places where internal democratic pressures are unlikely to lead to nonproliferation. Sterner NP sanctions only strengthen their resolve and often play into the hands of the proliferating regimes. It is these wild card "bad actors" that historically have fomented trouble. Almost cliched are the references to the Hitlers, Amins, Saddams, Stalins and others of But they are cliched because, in the end, they represent historical truth behind the cliché. Barry Schneider has coined the descriptive term NASTIs to describe these particularly troublesome regimes: NBC-Arming Sponsors Terrorism and Intervention.⁵

Common to NASTIs are their demonstrated desires to conquer or dominate the governments of neighbors, participation in sponsoring terrorist activities, and just plain "nasty" policies of "threats and acts of violence against regional and domestic opponents." It is against such states that the United States is most likely to become militarily engaged and whose possession of WMD is most to be feared. Our failure to fully close the door on proliferation leads us to foolishly trust flawed concepts of deterrence, invites others to deter us, and eventually brings us face to face with the ugly issues of retaliation and response in a dirty war which kills far too many people.

One of the enduring legacies of the Cold War was linking of WMD and deterrence. In dealing with NASTIs our lingering cold war mindset of deterrence is likely to fail. the U.S. and the U.S.S.R passed from bitter confrontation, through détente, and finally to the collapse of the Wall, we began to realize the changes our militaries must make and both sides divested themselves of large arsenals of nuclear and chemical weapons. But, as the weapons disappeared, the thinking about their employment didn't change. Deterrence was strategy and its original goal was fundamentally to prevent annihilation, not to successfully prevail in a limited conflict, and it worked by threatening the very annihilation it sought to avoid. But, such thinking about deterrence is really only valid between peer competitors whose power to destroy each other is The paradigm shifts when considering the interplay between a fully developed WMD state and a lesser growing threat. Annihilation is not the threat that a NASTI poses to the U.S. Neither are we likely to follow a policy of annihilation against the world's NASTIs (as appealing as that might be to some!) and therein lies one of the dangers of not effectively countering proliferation.

What the NASTIs threaten us with is massive and horrible casualties with the hope of persuading us not to even enter the fray. For a NASTI armed with WMD, in a confrontation with the

U.S. there are two possible outcomes - either they win by deterring us or they lose but still kill a lot of Americans. From the U.S. point of view we face a "lose - lose" proposition: either we are deterred and the NASTI "wins" by default or we "win" the war but only after the real probability of suffering horrible and massive casualties from WMD. When the military strategy behind deterrence is no longer backed by annihilation a smaller state CAN risk going to war against a superpower.

Conversely, if America, "The Lone Remaining Superpower," has learned anything since the close of the Second World War, it is that we can be strategically deterred by non-superpowers."

Korea, Vietnam, Lebanon, Somalia, and even Khobar Towers have shown that when American lives are lost visibly and in sufficient numbers - without readily commensurate benefit to our vital national interests - our policies and resolve are influenced. We can be deterred. In fact, one could argue that recent history shows that we have an ever decreasing threshold at which that deterrence takes place. WMD in the hands of regimes that are potential adversaries to the United States gives them an equity without which they would be hard pressed to militarily contend with the U.S..

The gloomy scenarios played out in simulation after simulation show the possibility of thousands of deaths inflicted by a foe with nuclear, chemical, or biological weapons.

Further, even anticipating such a battle is daunting. The costs to raise, train, and equip merely the necessary decontamination, detection, and similar units is so staggering as to lead one to correctly believe that we can't afford to prepare to fight on this battlefield. Still more frightening is the prospect that enemy use of WMD need not happen "on the battlefield." A WMD smuggled into one of our cities in anticipation of U.S. involvement in a conflict or crisis contrary to the interests of a proliferator is an increasingly likely scenario. Ultimately, failing to travel the early avenues to counter the proliferation of WMD leads us down a path of strategic questions that we do not want to walk.

The first of such questions concerns the use of WMD by the United States in response to an attack on it or its interests with The principle of proportionate response, and the occasional not so subtle threats by the U.S. to "massively respond," reveals a certain acceptance of the notion to use WMD. For the United States, because we've already eschewed chemical and biological weapons, this matter really concerns the use of nuclear weapons. Once this situation is thrust upon us, this issue transcends the mere willingness - or lack thereof - of the National Command Authorities (NCA) to use the U.S.'s only means of immediate and truly massive military response. We must first determine the response as essentially "retaliation" character of the

"operationally necessary." This is not a small distinction. Neither one is particularly palatable. "Retaliation" is associated with a desire to hurt and punish...not necessarily to prevail. The moral considerations on its use taints even the most virtuous of combatants. "Operational necessity" goes to our inability to swiftly and decisively "win" the conflict when we've been slowed by unexpected and massive casualties, or when can't get the requisite troops and materiel to the fight because of contaminated sea and airports. The price of "victory" in either case is high and the issues fomenting the confrontation become supplanted by the horrors of the reciprocal use of WMD.

Even so, if the U.S. decides to respond with a nuclear weapon, the post-cold war mix of retained weapons fails to offer the NCA an appropriate choice for today's threats. Our stockpile seems inordinately skewed to large yield "strategic" weapons with limited delivery means available. Gone are the smaller "tactical" weapons and the wider range of options those systems offered. The lack of weapons more suitable to modern deterrence and military utility is a strong argument for the use of massive conventional response to WMD use rather than nuclear. While massive conventional attacks against high value targets could be employed, such attacks take time, expend resources at prodigious rates, and may not prove immediately decisive. Even as the massive conventional attacks in World War Two did not

bring the Japanese to quit, so have massive conventional attacks in Iraq not finished that regime. A recurring use of conventional response to WMD use would only weaken the future deterrent value of U.S. nuclear weapons as the perception grows that we wouldn't really use them. It took the Bomb in World War Two. We should avoid getting ourselves - and the rest of mankind - into that position again.

The foregoing discussion of bitter questions describes only some of the unpalatable choices we will face when NP and CP policies fail. It is then that an American President will have to face the public when thousands of Americans have died from Ebolla or nerve agent and declare he will, or will not, use a It is then that a President will have to nuclear weapon. explain to the public why we opted out of defending vital national interests or close allies because we were deterred. What will the public say to the President when it is evident that, nation, we knew years earlier that proliferators were acquiring WMD yet we failed to stop it? avoid this path, perhaps a more germane and timely question for true counterproliferation policy is: How willing is the NCA to expend political capital to preemptively strike at proliferators early in the game, well before any hypothetical conflict becomes real, when we are otherwise at peace, but when non-proliferation efforts have clearly failed?

Our options for counterproliferation policy boil down to maintaining the status quo, renouncing the use of preemptive counterforce, or to more aggressively use military force to halt recalcitrant proliferators. In continuing our current policy of fairly robust declaratory policy but avoiding preemptive military action, we accept the risk of the inevitable "bad actor" as the price we pay for appeasing domestic international pressures to abstain from military confrontation. So far, this gamble has paid off, but in a long game the odds will always turn. Essentially we are hoping that no NASTIs will ever use WMD. Hope is not a good course of action when the price of misplaced hope is defeat. Rather than live with the problematic dichotomy of our current policy, we could instead openly renounce the use of preemptive force as counterproductive to trust and good order in an increasingly democratic and interdependent world. Such a policy, in the long run, might open doors that military force only shuts more tightly. success, however, hinges on the rationality and good nature of the proliferating regime. More than any other policy, it is susceptible to misjudgments because of "mirror imaging" our foe's rational intentions. It depends on our ability to be entirely successful in our NP efforts and, failing that, believes that deterrence works perfectly. This is a dangerous The remaining option is to begin to follow through on the literal meaning of our **Counter**proliferation policy by more aggressively engaging in military actions targeted against the proliferant activities of recalcitrant states.

History does not offer us a large set of examples of preemptive strikes which attempted to deny the development of a specific type of weapon except in the context of an already ongoing conflict. In World War Two (WWII), a successful special operation to sink a ferry carrying German heavy water and the targeting of German nuclear laboratories impeded the Nazis development of the atomic bomb9. Similarly, the bombing of Tokyo's laboratories in WWII and the coalition campaign to target Iraqi SCUD missiles were preemptive strikes. However, in all of these cases, we were already at war. While in WWII we were attempting to stop the development of the WMD; in Desert Storm we were already at the stage of trying to prevent its use! Perhaps the clearest example of a preemptive military strike aimed to frustrate a hostile state's acquisition of WMD is the 1981 Israeli air attack on the Osirak nuclear reactor in Iraqi. This attack took place during the Iran-Iraq war but involved a "non-combatant," Israel, militarily striking at a key node in the weapons development program of Iraq. The attack succeeded in destroying the reactor and if, as is probable, Iraq was using it in its drive for nuclear weapons, the attack probably succeeded in delaying Iraqi progress. In hindsight, while the

attack bought time, it did not halt the Iraqi program. To fully succeed it needed to be followed by aggressive NP efforts or continued military action. Neither occurred, and today the world is still frustrated by an Iraqi regime that appears to be tenaciously clinging to its WMD programs.

There is a school of thought which holds that the benefits which accrue from the use of military force in today's world are declining with each passing day. This viewpoint nurtures the reluctance of a political leader to direct the use of military force because of the feared backlash of both domestic and international public opinion. Dread of imprecise information, needless civilian casualties, and the appearance of bullying a weaker neighbor all play heavily in this reluctance. with the special sensitivity that the American culture holds toward our own casualties many current political leaders are loath to use preemptive military force. However, the benefits to be accrued from the use of military force may actually be increasing with respect to its costs. In fact, it can be argued that the Revolution in Military Affairs (RMA) makes the use of force more likely in the future because it is more palatable due to its increasingly discriminant nature coupled with improved lethality. 10 The ability to confine devastation to a specific leaving other infrastructure intact target while and the associated isolation of the action from civilian pain

suffering bodes for an increasingly acceptable outlook on the use of military force.

The scope, character, and risks of military actions to halt proliferation are very dependent upon the timing of the proposed To most successfully use force to halt proliferation it must be used very early against the development of objectionable WMD programs. For truly strategic preemption this means years before a potential enemy is prepared to use the WMD he is seeking to craft. For example, the destruction of a specific building - or even a specific portion of a building - which houses the germinating seed of a WMD program is entirely feasible. The use of a cruise missile or other precision guided munition, as in most other modern alternatives, need not even be tied overtly to the United States. Penetration to the target by a stealthy platform may leave the proliferator guessing as to the source of his frustration. More importantly, even if the proliferator suspects the source of the strike, a clandestine or stealthy operation affords the proliferator a choice he might not otherwise have. He can fully understand our resolve without having to resort to a posturing response against an overt U.S. action. Ideally, this might even make non-proliferation efforts following such a limited and specifically targeted strike all the more fruitful.

Along the same lines, the ability to identify, track, and target specific modes of transportation is a way to frustrate a developing WMD program. Especially in the proliferation of nuclear weapons, fissile material is an especially lucrative target and is not easily replaced. In the event that we know a specific aircraft, ship, train, or truck is carrying proliferant materials, we can intercept that vehicle and destroy or capture Whether it is taking down a ship at sea, the contents. penetrating a railcar on an isolated section of track deep inside the target nation, such counterproliferation missions are ideally suited to Special Operations units. As did the satellite photos of Russian missiles in Cuba, the captured items might prove to be the kind of tangible proof needed to galvanize world and public opinion against the proliferation.

Again, the mere concept of military force proliferators is not to construe that it is the option of first It is a determined choice to be used when serious nonproliferation efforts have fallen on deaf ears proliferant regime's behaviors leave no reasonable expectation that lesser means will succeed. Yet, its use must be early enough to maximize the probability of success and to minimize operational complexity and risks. In the CP regime, it is better to err on the side of going too early rather than too Whether it is a cruise missile strike, the sinking or seizure of a ship carrying proliferant materials, or the insertion of a small surgical force to destroy facilities and capture physical evidence, the military option can most easily destroy a fledging program as it is being born.

The longer preemptive military intervention is delayed the more its character changes. The targets become more hardened the number of important nodes increases. Perhaps most alarming, longer delay means that the likelihood of a developed and potentially useful WMD capability being hidden away for future use becomes more certain. Hesitation based on hopeful thinking merely squanders the chance to effectively use an important element of our national power and transforms the required military operations. They become less preemption, which halts the proliferation itself, and become instead somewhat more desperate operational and preemption designed to protect from the effects of proliferation that has been allowed to occur.

Further, if we wait too long, then the proliferator will eventually deter our own actions to halt the proliferation. This is evident by looking at the extreme boundaries of the problem. For example, it would be ludicrous - and suicidally dangerous - for us to militarily try to deny Russia or China their WMD. That is truly an instance where negotiations to role back the numbers and types of WMD are appropriate. Indeed,

START and other arms control conventions have been successful in reducing WMD inventories. However, the situation is not the same for less developed risks that are attempting to use WMD as a quick means to intimidate their neighbors and thwart the interests of the global community. For example, consider the situation at Tarhunah and other similar sites in Libya. demonstration of proliferation of WMD...and the proliferator's attempts to preserve and guard that capability. It is a nation that, at least by our own government's reckoning, is linked to terrorism. The challenge and risks associated in striking Libyan programs early on were significantly less. may not be anymore. With each passing day, the Libyan ability harden that underground facility vastly complete and increases the magnitude of an operation against it, allows for the production and dispersion of chemical weapons, and gains pseudo-legitimacy for the existence of the site by the prolonged inaction of all parties idly watching the development. The same holds true for the development of any other type of capability. At some point it becomes too dangerous to attempt to militarily halt the production of nuclear, biological, chemical weapons without a real chance that least one survives which can be used against the United States...and, as some have opined, it appears that even one is too much of a threat to permit.

The nation's reluctance to employ military force to roll back proliferation is symptomatic of mistakenly weighing perceived high domestic and international political costs against the actual benefits of conducting such an attack. It should be argued that the real political costs (as opposed to perceived political costs) are actually less for appropriate early military intervention. certainly costs a lot less domestic political capital for the nation's leadership to explain why we may have struck early against a proliferator than, at a later date, having to explain to a grieving American Public why we didn't do something about certain NBC weapons years ago, when we first knew that non-proliferation efforts were not succeeding. Moreover, one or two attacks against a NASTI's WMD programs will reinforce the seriousness with which we view non-proliferation and provides the occasional demonstration necessary to reinforce whatever perception of deterrence we wish to in potential adversaries. instill Not unlike the routine maintenance on any expensive and sophisticated machinery: "You can pay me now, or pay me a lot more later." The vital interests of the United States, and the policies that support them, certainly worthy of expenditures that avert disastrous costs later. Further, after decades of successful NP efforts, the community of nations is far more united against the manufacture and use of such weapons. This portends less, rather than more, outrage toward the judicious and force, especially when limited use of

specifically targeted against the "things" of WMD rather than the people or economies of a proliferator. Done at the proper time, both the financial and human costs of strategic preemptive military actions against WMD are small. In every sense, it is far less expensive for a tailored surgical strike to accomplish, and it forestalls the thousands of deaths, both military and civilian, that flow from a later confrontation against an enemy armed with and willing to use WMD.

In the international arena much has changed in the last several decades. During the depths of the cold war it was not at all clear that so many nations would forego development of WMD as is now the current reality. The numbers of legitimate and probable targets for strategic preemption of WMD are really quite limited. The NPT, CWC, and BWC signatories include almost every nation of the world. Among the few remaining nonsignatories, or those that have signed but don't comply, the NASTIs are the most likely candidates for a more assertive U.S. CP policy. These "pariah" states pose the greatest threat of transferring WMD technology to terrorist and other non-state actors, and they are the most likely to use them in a conflict with their neighbors or the U.S. The nations of the world community have staked their security and prosperity on severe limitations on the numbers of possessors of WMD. As a whole, the international community no longer holds in as high esteem the "right" of other powers to acquire WMD. The norms have changed. It is not in the interests of any of the signatories of the recent conventions prohibiting WMD to proliferation. Most of them, however, are unable to take the kind of unilateral action that the U.S. is able to mount to stop a proliferator bent on acquiring WMD. That said, to most successfully implement a more robust counterproliferation strategy we ought to seek international partners in support of our actions. It may even be advantageous to engage in combined operations when feasible, but this must not be construed as a prerequisite that prevents swift action when needed.

The international and domestic climate is right for the U.S. to link declaratory counterproliferation policy with a demonstrated willingness to forcibly stop proliferation of Weapons of Mass Destruction. We possess the means to do so in our existent military force structure. We should also be clear in communicating that such a policy is not central to our to halt proliferation; the success nonproliferation activities is encouraging and must be the path However, given the growing understanding of of first choice. the devastation and chaos that such weapons bring...especially in the hands of actors not bound by international norms of behavior...we must become more aggressive in stopping their spread. If we fail to do so now, we will assuredly someday rue the day we hesitated.

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ENDNOTES

- While preemption of proliferant WMD programs is not specifically addressed in the National Security Strategy, the right to use force to protect our vital interests is specifically reserved. "We will do whatever it takes to defend these interests, including when necessary –using our military might unilaterally and decisively." The White House. A National Security Strategy for a New Century, May 1997, p.9. Given the President's own characterization of the threat of WMD addressed in the following paragraph of this paper, the use of military force to counter the proliferation of WMD is certainly open for our consideration.
- ² Ibid, p.6.
- ³ Office of the Secretary of Defense. Proliferation: Threat and Response April, 1996, p.47.
- ⁴ Harald Muller cites many examples of how nonproliferation has succeeded, including places where nuclear weapons possession has been reversed. "Neither Hype nor Complacency: WMD Proliferation after the Cold War," <u>The Nonproliferation Review</u> 4 (Winter 1996) pp. 62,67.
- ⁵ Barry Schneider, "Strategies for Coping with Enemy Weapons of Mass Destruction." <u>Air Power Journal</u> 10 (Special Edition 1996): 36.
- ⁶ Ibid.
- ⁷ For an interesting thoughtpiece about American will and military ventures see Richard K. Betts "What will it take to Deter the United States?" <u>Parameters</u> (Winter 1995) 70-79. For a thought provoking description of strategic questions complicated by WMD see Barry R. Posen's "U.S. Security Policy in a Nuclear-Armed World, or: What if Iraq had had Nuclear Weapons?" <u>Security Studies</u> 6 (Spring 1997) 1-31.
- ⁸ There are many unclassified sources which describe the potential casualties from various types of WMD. The examinations of scenarios with which the author is familiar were all conducted in a classified venue. To prevent WMD use against deployed forces demands PERFECT intelligence, PERFECT targeting, PERFECT reliability of the counterweapon. That is not likely. It is not hard to visualize the effects of one nuclear weapon of even crude and modest size in an assembly area, port, or city. Nor is the release of a pathogen in the "rear" areas of Seoul or Dhahran a minor event.
- ⁹ While often cited as impeding the Nazi program to develop the atomic bomb, the attack may have actually been more important as an unintended deception operation. The Nazi need for heavy water stemmed from their decision to pursue a natural uranium reactor. Light water (regular water) doesn't work as a moderator in such a reactor because of its slightly higher neutron absorption properties. The German bomb program was already doomed to very slow progress when they went the heavy water route because they didn't have to learn the challenging

technologies for uranium enrichment. Repeated Allied attempts to frustrate the Nazi heavy water program may have fortuitously convinced the Nazis that it was more important than it really was.

¹⁰ For a full description of this argument see John Orne's "The Utility of Force in a World of Scarcity," <u>International Security</u> 22. (Winter 1997/1998) 138-167.

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